UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

October 29, 2013

Via E-mail
Richard Chin, M.D.
President and Chief Executive Officer
Kindred Biosciences, Inc.
1499 Bayshore Highway, Suite 226
Burlingame, California 94010

Re: Kindred Biosciences, Inc.
Draft Registration Statement on Form S-1
Submitted October 2, 2013
CIK No. 0001561743

Dear Dr. Chin:

We have reviewed your draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

General

1. Please file all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.

2. Prior to its use please provide us proofs of all graphic, visual or photographic information you will provide in the printed prospectus. Please note that we may have comments regarding this material.

3. Please supplementally provide us with any written materials that you or anyone authorized to do so on your behalf provides in reliance on Section 5(d) of the Securities Act to potential investors that are qualified institutional buyers or institutional accredited investors. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act

of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.

4. Comments to your application for confidential treatment will be delivered under separate cover.

Risk Factors
Most of our current and future small molecule product candidates are or will be based on generic human drugs…, page 12

5. We note on page 12 that you have selected some product candidates that are not available as a human generic in the United States. Please clarify if a veterinarian is permitted to import these drugs for non-human use.

Future federal and state legislation may result in increased exposure to product liability claims…, page 16

6. Please expand the discussion to state whether you currently have liability insurance and the extent of coverage.

Special Note Regarding Forward-Looking Statement, page 30

7. Please remove your statement that investors "should not rely on these forward-looking statements as predictions of future events." It is not appropriate to directly or indirectly disclaim liability for information in the registration statement.

Use of Proceeds, page 31

8. We note your statement that you have not determined the amounts you plan to spend for the particular uses for the net proceeds from your offering. However, if the company has specific purposes in mind for the use of proceeds, Item 504 of Regulation S-K requires disclosure of the approximate amount intended to be used for each such purpose. This is required even if, as you state, management will have broad discretion in allocating the proceeds and that the amount and timing of your actual expenditures may vary significantly from your expectations depending on numerous factors.

9. We note that you intend to use the net proceeds of this offering for the research and development of your product candidates. Please expand your disclosure to identify the product candidates and the stage of development for each product candidate that you expect to reach using the allocated proceeds.

Capitalization, page 32

10. You have excluded shares of common stock from the pro forma presentation that will be issued upon the automatic conversion of convertible preferred stock that was issued in

June and August 2013. It appears as though these transactions will have a material impact on your financial statements and should be reflected in the pro forma financial information. Please revise your disclosure or tell us why this pro forma financial information is not material to investors. Refer to Rule 11-01(a)(8) of Regulation S-X.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Stock-Based Compensation, page 38

11. We may have additional comments on your accounting for stock compensation and related disclosure once you have disclosed an estimated offering price. Please provide quantitative and qualitative disclosures explaining the difference between the estimated offering price and the fair value of each equity issuance.

12. Please revise your disclosures to explain how you estimated the value of the research and development efforts used in the Asset Approach for each internal evaluation performed. Please also disclose the weightings that were applied to both the Backsolve Method and Asset Approach at each valuation date.

13. Please disclose why the time to liquidity decreased to one year for the August 29, 2013 valuation from five years for the February 2013 internal valuation.

14. Please revise your disclosure and provide us with additional information regarding why the expected volatility assumption decreased to 44% for the August 29, 2013 internal valuation from 90% for the February 4, 2013 internal valuation. Please provide further detail as to how you identified the similar entities as discussed in ASC 718-10-55-25 and 718-10-55-37c. Specify how you considered the stage of life cycle, size and financial leverage of the peer group that you looked to in estimating your volatility factor.

Research and Development Expense, page 43

15. Please revise your disclosure to provide a break out of outsourced research and development expense by development compound for each period presented and for inception to date.

Business, page 48

16. We note that you filed the collaborations with the following parties as exhibits:

    - Medrio, Inc.;
    - IDEXX Reference Laboratories, Inc.; and
    - Sterling Pharmaceutical Services.

    If these collaborations are material to your company, please disclose all of the material terms agreed to by the parties. This includes, but is not limited to:

- material payment terms, including royalties owed;
- prior payments;
- the relevant intellectual property covered and rights conveyed as to such property;
- the duration of the agreement; and
- the material termination provisions.

17. Please amend your disclosure to describe the INADs submitted for CereKin, AtoKin, KIND-009, KIND-007, KIND-006 by indication and disclose when these INADs were filed and by whom. Additionally, please clarify whether you or anyone else has filed INADs for any of your biologic product candidates. If so, provide the same information as requested for your small molecule product candidates.

18. We note your graphics on page 2 and page 49. If you intend to file an INAD or similar application for any of these biologic product candidates, please include this in your table.

Competition, page 61

19. Please identify any generic equivalents that may compete with your three lead products and whether each of these generic equivalents is available in the US.

Intellectual Property, page 62

20. Please identify any material patents or patent applications that you have. Additionally, please expand your disclosure to provide a breakdown of your material patents as follows:

    - the subject matter of your patent;
    - the applicable jurisdiction for each of your material patents;
    - the type of patent coverage (e.g., method of use, composition of matter);
    - the date of issuance and expiration date (or, if a patent application, the date filed); and
    - whether the patent is owned or licensed and, if licensed, from whom.

    Alternatively, please amend your disclosure to state that you do not currently have any material patents or patent applications.

Management, page 66

21. Please expand your disclosure to include the name of Kevin Shultz's consulting business, his position at the company, and the period of time when he worked there. Additionally, please expand your disclosure to include any other business experience of Dr. Schultz between July 2008 and July 2013.

2012 Director Compensation, page 77

22. To the extent known, please amend your disclosure to summarize the terms of your proposed director compensation program.

Description of Capital Stock, page 82

23. We note on page 82 that as of September 15, 2013, there were options to purchase 1,167,073 share of your common stock. We also note on page 7 that the number of shares of common stock excludes 731,318 shares of common stock issuable upon exercise of stock options outstanding as of June 30, 2013. Please expand your disclosure to clarify the difference between these two numbers.

Shares Eligible for Future Sale, page 85

24. Once available please file copies of each of the lock-up agreements.

Notes to Financial Statements
12. Subsequent Events, page F-22

25. Please explain why the additional issuance of shares of Series A-1 Preferred Stock issued in June 2013 is disclosed as a subsequent event and whether and to what extent it is reflected in your financial statements at June 30, 2013 including the table of preferred stock outstanding on page F-13.

Exhibits Index

26. Please file your Investors' Rights Agreement as an exhibit pursuant to Item 601(b) of Regulation S-K.

If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide in the Division's October 11, 2012 announcement on the SEC website at http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm.

Please keep in mind that we may publicly post filing review correspondence in accordance with our December 1, 2011 policy (http://www.sec.gov/divisions/corpfin/cfannouncements/edgarcorrespondence.htm). If you intend to use Rule 83 (17 CFR 200.83) to request confidential treatment of information in the correspondence you submit on EDGAR, please properly mark that information in each of your confidential submissions to us so we do not repeat or refer to that information in our comment letters to you.

You may contact Vanessa Robertson at (202) 551-3649 or Jim Rosenberg at (202) 551-3679 if you have questions regarding comments on the financial statements and related matters. Please contact Matthew Jones at (202) 551-3786, John Krug at (202) 551-3862 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Daniel Greenspan for

Jeffrey P. Riedler
Assistant Director

cc: Via E-mail
Sanford J. Hillsberg, Esq.
TroyGould PC
1801 Century Park East, 16th Floor
Los Angeles, California 90067